EX.NO 5A- Program for Address Resolution Protocol (ARP) using TCP

Aim:

To write a java program for simulating ARP protocols using TCP

ALGORITHM:

Client

1. Start the program
2. Using socket connection is established between client and server.
3. Get the IP address to be converted into MAC address.
4. Send this IP address to server.
5. Server returns the MAC address to client.

Server

1. Start the program
2. Accept the socket which is created by the client.
3. Server maintains the table in which IP and corresponding MAC addresses are stored.
4. Read the IP address which is send by the client.
5. Map the IP address with its MAC address and return the MAC address to client.

Program

Client:

```
import java.io.*;
import java.net.*;
import java.util.*;
class Clientarp
{
        public static void main(String args[])
        {

try
{
                BufferedReader in=new BufferedReader(new InputStreamReader(System.in));
                Socket clsct=new Socket("127.0.0.1",5604);
                DataInputStream din=new DataInputStream(clsct.getInputStream());
                DataOutputStream dout=new
                DataOutputStream(clsct.getOutputStream());
                System.out.println("Enter the Logical address(IP):");
                String    str1=in.readLine();
                dout.writeBytes(str1+'\n');
                String str=din.readLine();
                System.out.println("The Physical Address is: "+str);
```

```
                clsct.close();
        }
        catch (Exception e)

        {
        System.out.println(e);
        }
        }
}
```

Server:

```
import java.io.*;
import
java.net.*;
import
java.util.*;
class Serverarp
{
        public static void main(String args[])
        {
        try
        {
                ServerSocket obj=new
                ServerSocket(5604);
                Socket obj1=obj.accept();
                while(true)
                {
                        DataInputStream din=new DataInputStream(obj1.getInputStream());
                        DataOutputStream dout=new
                        DataOutputStream(obj1.getOutputStream()); String str=din.readLine();
                        String ip[]={"165.165.80.80","165.165.79.1"};
                        String mac[]={"6A:08:AA:C2","8A:BC:E3:FA"};
                        for(int i=0;i<ip.length;i++)
                        {
```

```
                        if(str.equals(ip[i]))
                        {
                                dout.writeBytes(mac[i]+'\n');
                                break;
                        }
                }
                obj.close();
        }

    }
    catch(Exception e)
    {
        System.out.println(e);
    }
    }
}
```

Output:

```
E:\networks>java Serverarp

E:\networks>java Clientarp
Enter the Logical address(IP):
165.165.80.80
The Physical Address is: 6A:08:AA:C2
```

Viva Questions

1. What is ARP?
2. To Which OSI Layer ARP belong?
3. What is the use of ARP?
4. What is an ARP Request Packet is Generated?

Resut: Thus the ARP protocol using TCP Sockets program was executed.

EX.NO 5B Program for Reverse Address Resolution Protocol (RARP) using UDP

Aim:

To write a java program for simulating RARP protocols using UDP

ALGORITHM

Client

1.Start the program
2. using datagram sockets UDP function is established.
2.Get the MAC address to be converted into IP address.
3.Send this MAC address to server.
4.Server returns the IP address to client.

Server

1. Start the program.
2. Server maintains the table in which IP and corresponding MAC addresses are stored.
3. Read the MAC address which is send by the client.
4. Map the IP address with its MAC address and return the IP address to client.

Client:

```
import java.io.*;
import java.net.*;
import java.util.*;
class Clientrarp
{
public static void main(String args[])
{
try
{

DatagramSocket client=new DatagramSocket();
InetAddress addr=InetAddress.getByName("127.0.0.1");
byte[] sendbyte=new byte[1024];
byte[] receivebyte=new byte[1024];
BufferedReader in=new BufferedReader(new InputStreamReader(System.in));
 System.out.println("Enter the Physical address (MAC):");
String str=in.readLine(); sendbyte=str.getBytes();
DatagramPacket sender=new DatagramPacket(sendbyte,sendbyte.length,addr,1309);
client.send(sender);
DatagramPacket receiver=new DatagramPacket(receivebyte,receivebyte.length);
client.receive(receiver);

String s=new String(receiver.getData());
```

```
System.out.println("The Logical Address is(IP): "+s.trim());
client.close();
}
catch(Exception e)
{
System.out.println(e);
}
}
}
```

Server:

```
import java.io.*;
import java.net.*;
 import java.util.*;
class Serverrarp
{
public static void main(String args[])
{
try
{

DatagramSocket server=new DatagramSocket(1309);
while(true)
{

byte[] sendbyte=new byte[1024];
byte[] receivebyte=new byte[1024];
DatagramPacket receiver=new DatagramPacket(receivebyte,receivebyte.length);
server.receive(receiver);
String str=new String(receiver.getData());
 String s=str.trim();
InetAddress addr=receiver.getAddress();
int port=receiver.getPort();
 String ip[]={"165.165.80.80","165.165.79.1"};
String mac[]={"6A:08:AA:C2","8A:BC:E3:FA"};
for(int i=0;i<ip.length;i++)
{
if(s.equals(mac[i]))
{
sendbyte=ip[i].getBytes();
DatagramPacket  sender=new DatagramPacket(sendbyte,sendbyte.length,addr,port);
```

```
server.send(sender);
break;
}
}
break;
}
}
catch(Exception e)
{
System.out.println(e);
}
}
}
```

Output:

```
I:\ex>java Serverrarp12
I:\ex>java Clientrarp12
Enter the Physical address
(MAC): 6A:08:AA:C2
The Logical Address is(IP): 165.165.80.80
```

Result : Thus the RARP program using UDP was executed.